Abstract

A method for calculating the shape of a band-shaped superconductor (3) of a solenoid-shaped coil section of a high-field magnet coil (1) in a transfer region (5) is characterized in that the band-shaped superconductor (3) is changed in the transfer region from a first orientation (3a) tangentially flatly abutting on the surface of a cylindrical coil body (2) and substantially perpendicular to the longitudinal direction of the cylindrical coil body (2) to a second orientation (3b) with its narrow side seating on the surface of the cylindrical coil body and parallel to the longitudinal direction (or vice versa). The path z(u) is determined from the integral-differential equation

$$\frac{z''(u)}{(1+z'(u)^2)^{3/2}} = \frac{\sin(\tau \int_0^u d\hat{u}\sqrt{1+z'(\hat{u})^2})}{r_{min}}$$

wherein z: axial coordinate; u: azimuthal coordinate; û: auxiliary coordinate; τ: constant torsion in the transfer region; r_{min} minimum bending radius of the band-shaped superconductor, and wherein the position z=0, u=0 is associated with a boundary point 4a, 4b of the transfer region. This permits conductor guidance of a brittle band-shaped superconductor of a solenoidal coil section in an axial direction in a compact construction without joints.